Editorial — Virtual special issue on materials for energy efficient transport

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The continually growing profile of energy issues in the 21st century is closely linked to the challenges of national and global development, international economy, and the emphasis on goods transport and human travel all around us. These challenges make headlines and are reflected in the social trends towards environmentally friendly practices and responsible use of energy. However, major advances and large-scale improvements in the infrastructure can only be achieved by engaging all aspects of engineering research and development, with particular emphasis on the design and incorporation of new materials. The Special Issue was commissioned at Materials & Design since the strategic themes in energy materials research are closely aligned with the scope and priorities of the journal [1].

In the transport sector, energy efficiency has been recognized as a major issue, and continues to gain importance. A number of materials-related developments have already taken place, bringing significant reductions in fossil fuel consumption and CO2 emissions. However, to meet the ever more stringent targets ahead there is a need to develop new materials and to optimise the use of existing ones. Advances in this area require considerable concerted research effort and sustaining synergy across the interconnected disciplines of composites, metallurgy, mechanics, and energy storage and generation.

This Virtual Special Issue contains a collection of contributed papers on the following topics:
(i) materials for lightweight structures including alloys and composites,
(ii) materials for energy storage and the use of alternative energy sources,
(iii) materials for energy harvesting technologies,
(iv) materials for novel sensors.

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References

[1] A.M. Korsunsky, A.G. Gibson, G.D. Nguyen, M. Sebastiani, X. Song, T. Sui, Editorial note — on the aims & scope and priority areas in materials & design, Mater. Des., 88 (2015), pp. 1377–1380

Vitae

Prof Chris Bowen is currently an ERC Advanced Investigator in Novel Energy Materials Engineering Science and Integrated Systems (NEMESIS) at the University of Bath, UK. His research interests lie in functional materials, smart materials, sensors, actuators and energy harvesting.

Dr. Valeska Ting was appointed as the University of Bath's Prize Research Fellow in Smart Nanomaterials in 2012 and is currently a lecturer in the Department of Chemical Engineering. Her research interests lie in the area of sustainable technologies, with a focus on the application of nanoporous materials for energy storage.
Dr. Tan Sui conducts research in the field of functional and structural properties of advanced materials and devices, from natural tissues to electronics systems, making extensive use of synchrotron X-rays for imaging, diffraction and spectroscopy studies. She is in charge of advanced instrumentation for multi-modal microscopy at the Oxford MBLEM lab, and is also Managing Editor of Materials & Design.

Prof Alexander M. Korsunsky, Head of the Oxford MBLEM lab, and Editor-in-Chief of Materials & Design, is a world-leading expert in the analysis of deformation, structure and function of materials across the scales.